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Differential Reinforcement of Empathic and Ego Classes of Pronouns Among Children.

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Louisiana State University, Ph.D., 1962
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DIFFERENTIAL REINFORCEMENT OF EMPATHIC
AND EGO CLASSES OF PRONOUNS AMONG
CHILDREN

A Dissertation

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Louisiana State University and
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in partial fulfillment of the
requirements for the degree of
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in

The Department of Psychology

by
James L. Harris
B.A., Louisiana State University, 1949
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ABSTRACT

The present study was undertaken to investigate the effect of operant verbal conditioning upon the choice of two classes of pronouns among children. The investigation was designed with two goals in view. The first was to compare the effect of operant conditioning upon the two categories. The second goal was to determine whether children of this age group show a preference for one class of pronouns. It was felt that if such a preference were found, then further investigation might reveal a relationship between such preferences and the level of social development of the child.

Four groups of subjects composed equally of second and third grade students were tested. Two groups were reinforced for ego (personal) pronoun responses and two for empathic (impersonal) pronoun responses. Extinction trials were run for half of the subjects in each category. All groups were retested for extinction effects 2 weeks later. A fifth group acted as controls. The reinforcing apparatus consisted of a toy clown the nose of which was a red light.

The children were given instructions to talk to the clown to make him happy so that his nose would light up. The occurrence of the reinforcing light was dependent upon the production of the specific pronoun class, ego or empathic, of the group to which the child was assigned.

It was found that conditioning of both personal and impersonal pronouns occurred. Typical acquisitions curves were produced by the learning trials. However, there were no significant differences between the response strengths of the two categories.

Extinction did not occur from either the extinction trials or from

the two week interval intervening between experimental trials and the retest period. Explanations for this finding are offered.

Comparisons of the responses of the two classes of pronouns given by the respective groups during the operant period revealed no significant differences.

Similar comparisons of the number of ego and empathic pronoun responses given by the control group also were not significant. Thus, children of this age group do not appear to have significant differences in their choice of personal or impersonal pronouns.

The significance of the results of this study and their implications for future research are discussed.

INTRODUCTION

There have recently been an increasing number of studies appearing in the literature which have utilized the operant conditioning method for studying verbal behavior (Adams, Butler and Noblin, 1961; Adams, Noblin, Butler and Timmons, 1961; Ball, 1952; Binder, 1957; Cohen, Kalish, Thurston and Cohen, 1954; Cushing, 1957; Daily, 1953; Eriksen and Kuethe, 1956; Fahmy, 1953; Greenspoon, 1954; Greenspoon, 1955; Grossberg, 1956; Hartman, 1955; Hildum and Brown, 1956; Kanfer, 1954; Klein, 1954; Mandler and Kaplan, 1956; Marion, 1956; McNair, 1957; Mock, 1957; Nuthmann, 1957; Salzinger and Pisoni, 1957a; Salzinger and Pisoni, 1957b; Salzinger, Salzinger, Pisoni, Eckman, Mathewson, Deutsch, and Zubin, 1962; Sarason, 1957a; Sarason, 1957b; Sidowski, 1954; Spivak and Papajohn, 1957; Taffel, 1955; Tatz, 1956; Timmons, Noblin, Adams, and Butler, 1961; Verplanck, 1955; Wickes, 1956; Wilson and Verplanck, 1956). Although the greater number of such studies have used adult subjects, a number have been concerned with the study of verbal conditioning in children (Bijou, 1955; Bijou, 1957; Estes, 1945; Fattu, Auble and Mech, 1955; Fattu, Mech and Auble, 1955; Gerwitz and Baer, 1957; Lambert, Lambert and Watson, 1953; Rheingold, Pisoni, Eckman, Mathewson, Deutsch, and Zubin, 1962; Siegel and Forshee, 1953; Warren and Brown, 1954). These studies have presented a wide variety of experimental evidence that verbal responses can be experimentally controlled by means of reinforcement (Krasner, 1958; Salzinger, 1959).

Salzinger (1958; 1962) has stated that reinforcement within the operant conditioning framework should provide an opportunity to test for the parameters of any verbal response class by applying reinforcement

to that class. Such classes were defined as a group of words which is chosen and specified by the experimenter. The parameters could be studied by simply determining which words do or do not increase in frequency. In this manner it becomes possible to determine any discrepancies between the response class as arbitrarily defined by the experimenter and the way the subject's verbal behavior actually changes as a result of reinforcement. He then stated that these "natural" classes may prove more useful as a developmental index than response classes prescribed by the experimenter.

Operant conditioning techniques have now been used to investigate a number of verbal response parameters. Salzinger, et al (1960) used the process to evoke lengthy periods of continuous speech in adult schizophrenics. Timmons, et al (1961) and Adams, et al (1961) employed operant verbal conditioning to compare the efficacy of verbal reinforcers and psychoanalytically-derived interpretations in raising the frequency of personal pronouns among hospitalized male schizophrenics. Salzinger, et al (1962) made use of the technique in investigating the effect of different schedules of reinforcement on the continuous speech of children. The latter study also investigated the effect of reinforcing a specific verbal response class on the total production of speech. The present investigation used a similar technique to study the effect of the reinforcement of two classes of pronouns among second and third grade students. The specific technique used was a variation of the one devised by Salzinger.

The use of two classes of pronouns, personal and impersonal, seemed warranted for two reasons. First it provides an opportunity to compare the effect of operant conditioning on the two categories. Secondly, it makes it possible to test the developmental index of these pronouns in

children at a certain stage in their development. This latter investigation seems particularly warranted because of the belief held by many specialists in the field of child development that this age is a critical one in the socialization of the child. If it is true that children in this age group are becoming less egocentric and more socialized, then this change might be reflected in the child's choice of pronouns. It can be hypothesized that the use of a greater number of personal pronouns i.e. I, me, my, mine, myself, represents a more egocentric self concept. Conversely, the more frequent use of impersonal pronouns i.e. he, she, it, we, etc., represents a more socialized or empathic relationship to the environment. Berg (1958) hypothesized that emotionally disturbed persons would be more egocentric than those who were better adjusted. He tested this hypothesis by studying the word choice of a client in counseling and found that ego words such as I, me, etc., tended to decrease in frequency as the client's adjustment improved, while empathic words increased. If a similar relationship exists between the choice of pronouns and the stage of social development in the child, then the effect of reinforcement on empathic relationships could be investigated in a simple manner.

METHOD

Subjects: There were 60 subjects divided into five groups. Each group consisted of 12 subjects from the second and third grades of the Devoll Elementary School located in West Baton Rouge Parish. The mean age of the second grade students was 7 years, 10 months; of the third grade students, 9 years, 3 months.

Design: The subjects were randomly divided into 5 groups. Insofar as possible, each group was assigned an equal number of second and third grade pupils and an equal number of males and females respectively.

Two groups received reinforcement for each personal pronoun (I, me, my, mine and myself) that was spoken during the experimental sessions. One group also received an extinction period. Two groups were reinforced for each impersonal pronoun response. For these groups all impersonal pronouns except it were rewarded. One group received the same extinction procedure as was given the personal pronoun group. All four groups were given an operant period prior to the conditioning periods. The remaining subjects acted as controls.

Each group was retested approximately two weeks after the initial conditioning trials to test for the permanency of any changes that might have occurred as a result of the conditioning trials.

Apparatus: The apparatus used for the delivery of reinforcement was a toy clown which had been modified so that its nose was a 7½ watt red light bulb. It was mounted on a wooden stand in a sitting position. The light could be turned on and off by a switch which was hidden from the subject. A Mercury electrical impulse counter was connected in series with the switch so that the number of reinforcements could be recorded.

There was also a device to hold a stop watch for the timing of the experimental trials. A picture of the apparatus is shown on page 26 of the appendix.

The electrical impulse counter produced an audible click which in effect resulted in a compound stimulus consisting of the light and the click of the timer.

Procedure: The subjects were run individually. Each subject was directed to the testing area which was located in an empty classroom. In order not to interrupt the regular school program, it was necessary to use a different room on two occasions, but only a small number of subjects were tested in these different surroundings.

The subjects were seated in front of a desk, on which the clown had been placed, in such a way that they were facing the clown. The experimenter was partially hidden from the subject and the switch controlling the light was completely hidden from the subject's sight. The experimenter spent approximately three minutes establishing rapport with each subject.

The instructions given the subjects were a modification of those used by Salzinger, et al. They were as follows:

"This is Happy the Clown. He wants me to tell you something. This is what he wants me to say: I'm so happy. I'm so ha-pa-pa-ha-pa-pa-happy (clown's nose lights up). Whoops, well hi there. My name is Happy (light). What's yours? (waits for child's reply). That's a nice name. Say, how do you like my new hat? (waits for reply). Well, you know, I bought the hat especially for you boys and girls at this school. I'm so happy to be here (light). How do you like that! Every time I'm happy my nose lights up (light). Say, would you like to play a game with me? (waits for reply). Because we can have lots of fun together. Why don't you try to make me happy so my nose lights up? (light). All you have to do is talk to me, but only certain things you say will make me happy (light). You can tell me what you'd like to be when you grow up, what you do here in school, about your friends, and anything else you want to say to me. Now, do you understand the rules of the game? (waits for reply). You're supposed to talk to me and try to make me happy by getting my nose to light up (light). From now on, I'm not going to say anything. I'll only light up when you make me happy (light)."

Each experimental group was given an operant period which lasted for five minutes, a conditioning period of ten minutes duration and, two weeks later, a five minute retest period in which conditioning was withheld.

One of the groups which had been reinforced for the production of personal pronouns and one which had been reinforced for impersonal pronoun responses also received a five minute extinction period in addition to the other experimental periods.

During the operant period the number of personal and impersonal pronouns, depending upon the experimental group being tested, were recorded by the experimenter. These responses were hand recorded to prevent any conditioning that might have occurred as a result of the click produced by the electrical timer.

During the conditioning period reinforcement was given on a regular 1:1 schedule, and an attempt was made to reinforce the pronouns as soon as possible after they occurred. The number of pronouns produced during each five minutes of the conditioning trials were also recorded for the comparisons of the rates of conditioning during the two periods.

Extinction trials were conducted by withholding the reinforcements. The total number of pronouns emitted during this period was recorded in the same manner as that used in the operant period.

For the retest period the subjects were given the following instructions:

"Happy wants to play the same game with you that you played the other day. Do you remember how it is played? (wait for reply). You just talk to him and try to make him happy so his nose will light up. (light) From now on he's not going to say anything. He'll only light up when you make him happy (light)."

The same method of recording was used as was employed in the operant and extinction trials. At the end of the test period each subject of the

experimental groups was asked whether he had determined what had made the clown's nose light up.

The control group was given the same initial instructions as were given the experimental groups. The subjects were then allowed to talk for 25 minutes without reinforcement. The number of personal and impersonal pronouns responses for each subject were recorded in the same manner as has previously been described for the operant group.

For eight of the control subjects the number of responses were recorded for each five minute period of the test session for comparison with the frequency of the pronoun responses during the corresponding periods of the experimental groups.

RESULTS

The data were first analyzed by a Lindquist type III analysis of variance (Lindquist, 1956). A summary of this analysis is presented in Table 1. The first comparisons were between the combined groups receiving reinforcement for the ego pronoun responses and the combined reinforced for empathic pronoun responses. The F score of 1.55 was not significant.

A comparison of groups that were extinguished with those which were not extinguished revealed no significant differences ($p > .05$). There was a significant interaction between these two treatments ($p > .05$).

The effect of the trials was highly significant with $p < .001$. There was also a significant interaction effect between trials and the ego vs. empathic treatment ($p < .001$). The triple interaction among trials and the two treatment groups was also significant ($p > .05$). However, there was no significant difference of the interaction between trials and the extinction vs. extinction treatment ($F > .05$).

Tests were computed by the critical difference method of Lindquist (1956) for all trials of the four experimental groups. These results are given in Table 2.

Comparisons of all combinations of the operant period trials revealed no significant differences. Thus, there were no significant differences in the number of personal pronouns emitted and the number of impersonal pronouns given by the respective experimental groups during these periods.

Comparisons of all combinations of the first five minutes of the conditioning trials failed to show any significant differences in the conditioning rate for any of the four groups. Similar comparisons for

the second five minutes of the conditioning trials revealed no significant differences in the conditioning rates during these periods.

Comparisons of the mean pronoun responses given during the operant period with those given during the first five minutes of conditioning for the four groups were significant only for the empathic pronoun group that was extinguished. The significance of this difference appears to be related more to differences in the population of the group than to any effect of the treatment that it received.

Comparisons of the mean pronoun responses for the two time periods of the conditioning trials revealed no significant differences indicating that there were no differences in the rate of conditioning between the two periods for any group.

The respective comparisons of the mean pronoun responses for the two conditioning periods with those of the retest periods for all groups were not significant. Thus, it may be concluded that there was no significant extinction effect for the groups that were extinguished. It may also be concluded that there was no significant decrease in the learning curves for any of the groups as a result of the two week interval between conditioning and retesting.

Learning curves for all groups are presented in terms of mean pronoun responses per experimental trial in Table 3. Comparisons between the individual trials of the empathic pronoun group that was extinguished with those of the other three groups revealed significant differences or differences approaching significance for all trials except those of the operant periods. These differences appear related to differences in the subjects rather than to any treatment effect.

This conclusion is supported by data from the empathic pronoun group which did not receive an extinction period. Significant differences were not found in comparisons of the individual trials of this group with those of the two personal pronoun groups. If there had been significant treatment effects as a result of the class of pronouns reinforced such effects should have appeared in both groups receiving reinforcement for that specific class.

Extinction curves for the two groups that were extinguished are presented in Table 4. In neither group was the extinction period of sufficient length to allow extinction to occur. In future studies of this type the length of the extinction period should be increased for two reasons. First, it would be of interest to study the extinction process to determine whether extinction will occur. Such a study would be of value because of the light it would shed on the development of the learning process in children. Secondly, if extinction does occur, it would be valuable to determine a standard period of time for the extinction phase for future research with this age group.

Comparisons of the mean number of ego pronoun and empathic pronoun responses for the control groups were not significant. Thus, children of this age group do not appear to have significant differences in their choice of personal or impersonal pronouns.

DISCUSSION

Data from the present study reveal that conditioning of both personal and impersonal pronouns do occur in second and third grade students. Typical acquisition curves were produced as a result of the conditioning trials. However, there were no significant difference in increases between these classes of pronouns as a result of this conditioning. Thus, it appears that children of this age show no preference in their choice of pronoun classes. The obvious explanation for these results is simply that children in general do not tend to use either class more than the other. However, the question must remain open for two reasons: It is possible that the age group represented in the present study are at a stage of their socialization in which they have no clear cut tendency to either egocentric or empathic behavior. It may be that a replication of the study with either a younger group or an older group would show significant differences in the choice of the two pronoun classes as a function of that particular stage of social development.

In addition a subjective analysis of the data revealed that certain of the subjects tended to use a significantly greater number of either personal or impersonal pronouns. It is possible that the use of these classes may not be a function of development per se, but may reflect other factors such as the personality of the individual. Further research is needed before any definite conclusions may be drawn.

The failure to obtain extinction has been a persistent problem in verbal conditioning experiments. In a verbal conditioning study of male schizophrenics using psychoanalytic derived interpretations as reinforcement

Adams, et al (1961) found a significantly higher level of pronouns in extinction than in treatment. Klein (1954) compared three methods of reinforcement, negative reinforcement, counter-conditioning and non-conditioning, and found that non-conditioning produced the slowest extinction. The failure to obtain extinction in this study may have resulted from an insufficient amount of time being allowed for the process to occur. However, in light of the evidence just cited, the reason for the extinction results is not clear. It is possible that children may resemble Adams' schizophrenics and extinguish only after a long extinction period if at all. There is the further possibility that the use of non-reinforcement, which Klein found to produce the slowest rate of extinction, may have been responsible for the failure of the groups to extinguish. Finally, there may have been a combination of two or more of these factors operating during the extinction process. In any case the results point up the need for further research in this area in operant verbal conditioning.

The strength of the response frequencies for the groups during the retest period is a surprising result. Most conditioning studies that have included intervals of similar lengths to those in this study between conditioning and retesting have shown sharp decreases in the response strength in the retest period. The experimenter is at a loss to explain the results in this study from the available data. It would appear that further investigation in this particular area is needed to clarify the picture.

The group that received reinforcement for impersonal pronouns responses and that was extinguished seems to merit some special discussion.

This group had a significantly greater number of responses for all periods except the operant period when individual comparisons were made with all other groups. Additionally, there was a marked increase in the number of pronouns used in the retest period over those given in the conditioning periods. This was the only group in which this phenomenon occurred. In the experimental procedure this group was the last to be tested. The testing was common knowledge throughout the school and a frequent topic of conversation among the students. It may be that some subjects had detected the purpose of the study even though they had reported otherwise and had passed on the information to other students. If such information were available, the subjects in the group would have had the longest period of time to have obtained it. If a sufficient number did receive this information, then the results might have reflected this sophistication of the subjects. The experimenter is not aware of any such information being known, but offers it as a possibility. However, the best explanation appears to be that results from this group was a result of some sampling error. Until the investigation can be replicated, the question must remain open.

Finally, a word about the specific conditioning techniques used in this study seems in order. The use of a clown or some similar device appears to have definite advantages in investigations in which children are used as subjects. The subjects in the present study were interested in the clown and maintained their interest throughout the experimental session. This was true for all subjects even those in the control group who were given 25 minute sessions without reinforcement. This interest was not confined to the children in the study alone but was also noted among those in the school who happened to see the clown in the halls or

in the testing room when the experiment was not in progress.

The reaction of some of the children to the clown was striking. Some subjects reacted as if it were alive and even awaited replies after asking it specific questions. Others appeared to forget the experimenter was in the room and related to the clown as if it were a playmate.

The technique has now been established as a useful one in verbal conditioning studies in children and will probably be used more widely in future investigations in this area. In addition to its use in experimental investigation, it appears to have potential applications in other areas as well. The technique might have possibilities as a therapeutic device in speech therapy, in the treatment of certain types of emotional disturbance, and in remedial education. Further research in these areas are needed so that the efficacy of the technique can be put to the test of rigid scientific methodology.

SUMMARY

The present study was undertaken to investigate operant verbal conditioning of pronouns in children. It was hypothesized that the stage of socialization in children might be reflected in their choice of ego (personal) or empathic (impersonal) pronouns, and this choice would be more sensitive to reinforcement.

To test this hypothesis four groups of subjects composed equally of second and third grade students were tested. Two groups were reinforced for ego pronoun responses and two for empathic pronoun responses. Extinction trials were run for half of the subjects in each category.

The results did not support the hypothesis. There were no significant differences in the choice of either response category or of the frequencies of the selected class after reinforcement. Explanations for these findings were suggested.

Although the specific hypothesis was not supported, there was definite evidence that operant verbal conditioning does occur in children of this age group.

Extinction did not occur during any of the extinction periods probably as a result of insufficient time being allowed for it to occur. Alternate explanations were also given for this finding.

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Table 1

Summary of Analysis of Variance

Source	df	ms	F
Ego vs Emp (A)	1	3120.00	1.55
Ext vs No Ext (B)	1	1514.33	0.76
Interaction (AB)	1	8549.51	4.24*
Between error	44	2013.79	
Trials (T)	3	1928.00	6.06**
Interaction (TA)	3	2569.75	8.07**
Interaction (TB)	3	127.55	0.40
Interaction (TAB)	3	1641.44	5.16*
Within error	132	318.24	
Total	191		

* Significant at .05 level of confidence

** Significant at .01 level of confidence

TABLE 2

T Tests For All Trials of the 4 Experimental Groups

T Computed by Critical Difference Method

of Linquist

			EGO NO EXT.				EGO EXT.				EMP NO EXT.				EMP EXT.			
			T R I A L S				T R I A L S				T R I A L S				T R I A L S			
			OP	C ₁	C ₂	RT	OP	C ₁	C ₂	RT	OP	C ₁	C ₂	RT	OP	C ₁	C ₂	RT
EGO		OP		13.00	*15.45	6.27	4.34	10.34	9.51	3.74	3.91	12.76	11.84	10.34	6.84	*24.42	*24.17	*34.26
NO		C ₁			2.54	6.73	8.66	1.66	3.49	*16.74	*16.91	0.24	1.16	2.66	8.66	2.66	3.49	*16.74
EXT.	TRIALS	C ₂				9.27	13.20	5.20	6.03	*19.28	*19.45	2.78	3.70	5.20	11.20	*16.40	6.03	*19.28
		RT				1.93	4.07	3.24	10.01	10.18	6.49	5.57	4.07	0.57	*18.15	*17.90	*27.99	
EGO		OP						6.00	5.17	2.08	8.25	14.25	13.42	0.17	2.50	*20.08	*19.83	*29.92
		C ₁							0.83	4.08	14.25	2.42	1.50	0.00	3.50	14.08	13.83	*23.92
EXT.	TRIALS	C ₂								13.25	13.42	3.25	2.33	0.83	2.67	14.91	14.66	*24.75
		RT								0.17	*16.50	*15.58	14.08	10.58	*28.16	*27.91	*38.00	
EMP.		OP										*16.67	*15.75	14.25	10.75	*28.33	*28.08	*38.17
NO.		C ₁											0.92	2.42	5.92	11.66	11.39	*21.50
EXT.	TRIALS	C ₂												1.50	5.00	12.58	12.33	*22.32
		RT													3.50	14.08	13.07	*23.92
EMP.		OP														*21.58	*18.67	*27.38
EXT.		C ₁															0.25	9.84
	TRIALS	C ₂																10.09

OP = Operant Period

Critical Difference = 15.14

C₁ = First 5 minutes of Conditioning Period * P < .01C₂ = Second 5 minutes of Conditioning Period

RT = Retest Period

TABLE 3
ACQUISITION CURVES FOR THE FOUR
EXPERIMENTAL GROUPS

— EGO NO EXT
 ■ EGO EXT
 ● EMP NO EXT
 ▲ EMP EXT

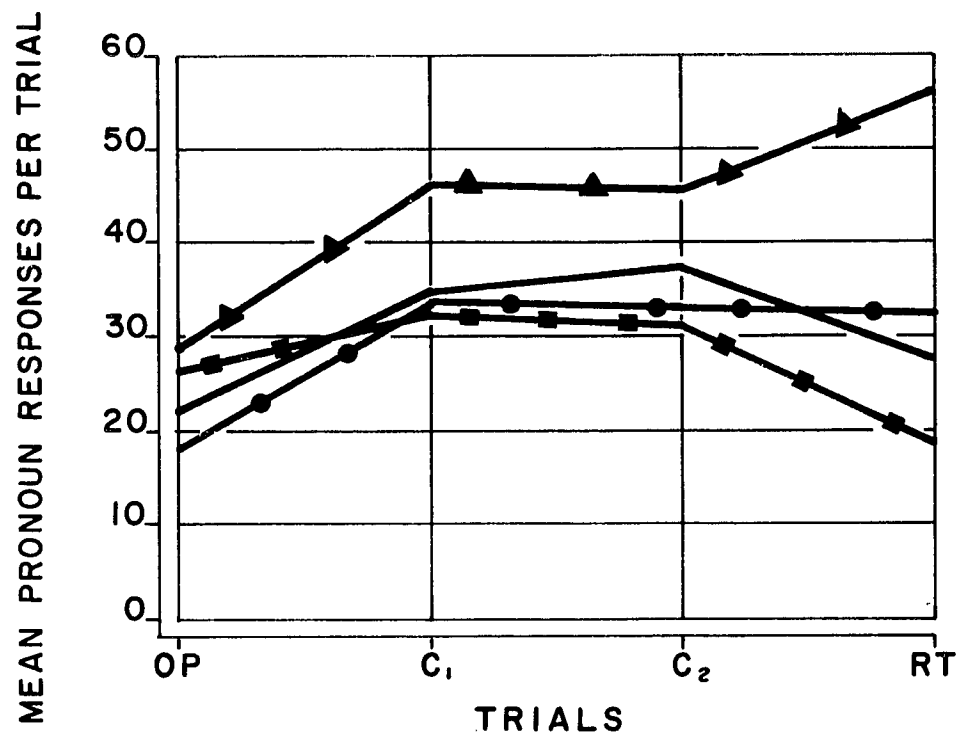


TABLE 4
ACQUISITION CURVES FOR THE TWO
GROUPS RECEIVING EXTINCTION

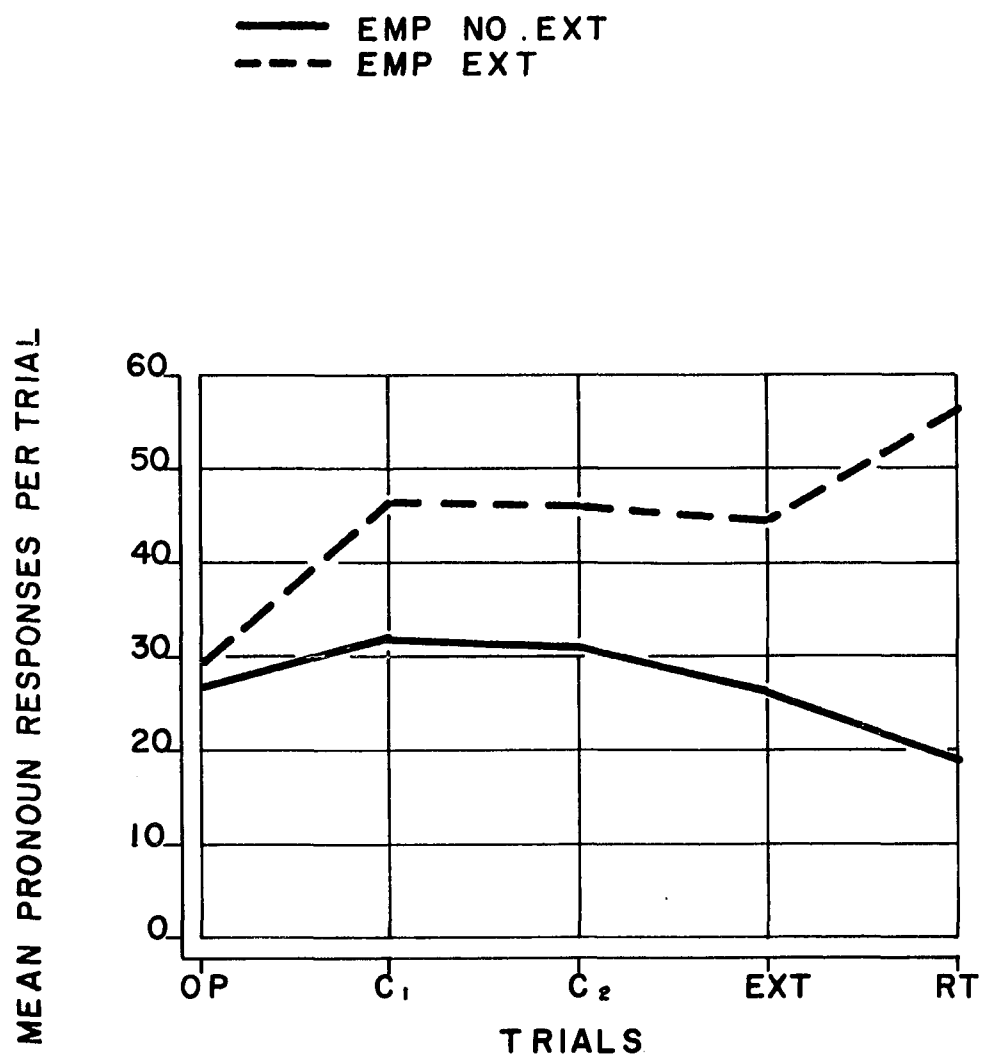


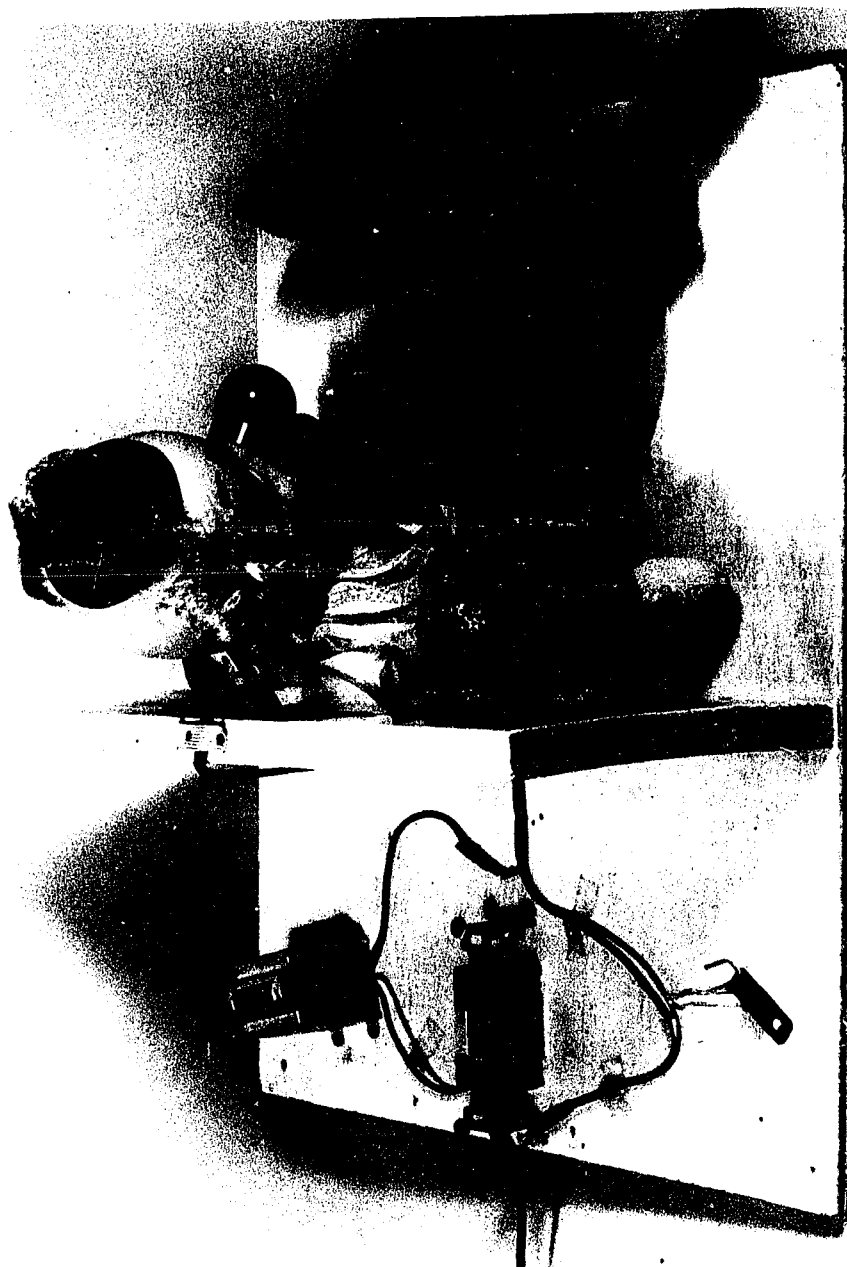
Table 5

MEANS AND SDs OF PRONOUN RESPONSES FOR ALL GROUPS

GROUPS		MEANS	SD
EGO NO EXT	OP	21.91	19.80
	C ₁	34.91	24.18
	C ₂	37.45	21.65
	RT	28.18	20.85
EGO NO EXT	OP	26.25	18.26
	C ₁	32.25	27.32
	TRIALS C ₂	31.41	63.75
	EXT	25.83	21.13
	RT	19.17	19.96
EMP NO EXT	OP	18.00	29.90
	C ₁	34.67	20.20
	C ₂	33.75	23.40
	RT	32.25	34.80
EMP NO EXT	OP	28.75	23.52
	C ₁	46.33	30.04
	TRIALS C ₂	46.08	29.50
	EXT	44.67	31.87
	RT	56.17	33.24

Plate 1

Picture of the Conditioning Apparatus



VITA

James L. Harris was born in Shreveport, Louisiana on January 15, 1921. He received his elementary and secondary education in Shreveport. After serving thirty-eight months in the United States Army he entered Louisiana State University in 1946 and received the degree of Bachelor of Arts in August, 1949. After completing one year of graduate work, he was employed as a psychologist by the Central Louisiana State Hospital, Pineville, Louisiana, June 1, 1950. He resumed his graduate studies at Louisiana State University in February, 1957 and received the Master of Arts degree in June, 1958. From July, 1958 to June 30, 1959 he served an internship in psychology at Charity Hospital in New Orleans, Louisiana. In December, 1959 he joined the staff of the Louisiana Evaluation Center in New Orleans and has remained there until the present time. His graduate studies were completed and he became a candidate for the Doctor of Philosophy degree in August, 1962.

EXAMINATION AND THESIS REPORT

Candidate: James Lamar Harris

Major Field: Psychology

Title of Thesis: Differential Reinforcement of Sympathic and Ego Classes
of Pronouns Among Children

Approved:

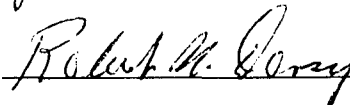
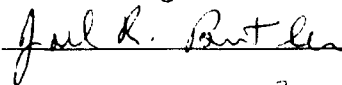
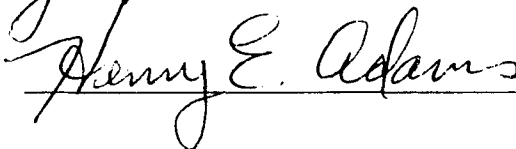


Major Professor and Chairman



Dean of the Graduate School

EXAMINING COMMITTEE:



Date of Examination:

July 26, 1962